Mathematics BSc (Hons)

UCAS Code: G100 | Duration: 3 years | Full-time | Hope Park | 2025/2026

Accredited | Placement year opportunities available



Course Overview

Mathematics is a fascinating and exciting subject. Studying mathematics at university offers a deep dive into the language of the modern business and commerce, engineering, science and technology, where abstract concepts meet real-world applications. At Liverpool Hope, you will develop a passion and enthusiasm for mathematics and its applications. Mathematics encompasses many analytical and numerical methods that are used to solve scientific and industrial problems.

Mathematics at Liverpool Hope has been designed to help you develop strong analytical and numerical abilities, and skills so that you learn how to look at problems, break them down into simpler questions and then solve them. As a mathematics student, you'll explore diverse areas such as calculus, algebra, statistics, and differential equations. You'll develop critical thinking, problem-solving, and analytical skills, which are highly valued in various careers from finance and technology to research and education. University mathematics is not just about solving equations; it's about understanding patterns, structures, and the underlying principles that govern natural and artificial systems.

Our degree covers all areas of mathematics including pure mathematics, applied mathematics and statistics. By the end of your degree, you will be confident in tackling real world problems mathematically. By studying with us, you can expect to be given not only first-class tuition and teaching, but first-class support. We pride ourselves on providing an excellent student experience, and the tutors at Liverpool Hope work hard to ensure that you get the most from your degree.

Entry Requirements

This course follows the standard University entry requirements. Please see the website for further information.

Fees and Additional Costs

The tuition fees for 2025/2026 are £9,535 for full-time undergraduate courses.

As well as your tuition fees, you need to consider the cost of books, software, and general computer consumables such as USB flash drives and printing. We estimate this to cost around £300.

You will also need to consider the cost of your accommodation each year whilst you study at university. Visit our accommodation webpages for further details about our Halls of Residence: www.hope.ac.uk/halls

Applicants will need access to a computer if course delivery is switched to online. The University has a laptop lending service if remote study is necessary.

Accreditation

This single honours BSc degree has been accredited by the Institute of Mathematics and its Applications. This degree will meet the educational requirements of the Chartered Mathematician designation, awarded by the Institute of Mathematics and its Applications, when it is followed by subsequent training and experience in employment to obtain equivalent competences to those specified by the Quality Assurance Agency (QAA) for taught masters degrees.



LIVERPOOL HOPE UNIVERSITY 1844



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Mathematics BSc (Hons) Curriculum

Year One

Introduction to Mathematics

The purpose of this course is to cover the fundamentals of mathematics that a new undergraduate should know.

Set theory, Logic, Numbers and proofs

This part of the course is aimed to get students thinking mathematically.

Calculus

Although this is studied at school, we take a different approach to calculus and look at this as the study of functions and the way they behave.

Complex numbers

This topic is based around the square root of one, which we call the imaginary number.

Linear algebra

We begin this topic by looking at vectors and matrices before looking at how we can use such properties to solve several equations at once.

Statistics, probability and combinatorics

Being able to effectively deal with data is a prerequisite for most scientific-based employment.

MATLAB & programming

Modern mathematicians are expected to know some programming and we introduce students to the basics of structured problem solving.

Those doing single honours will also study:

- Mathematical modelling
- Application of mathematics
- Difference equations
- Ordinary differential equations
- Graph theory
- Financial Mathematics
- Mathematical communication

Year Two

Explorations in Mathematics

With the fundamentals covered at Year 1, we keep the Year 2 topics quite broad but start to focus in on some areas of mathematics.

Multivariable & vector calculus

We extend the calculus covered at year 1 to include functions of several variables.

Differential geometry

In this topic, we look at some geometrical techniques that utilise calculus.

Linear algebra

We extend the linear algebra topics covered in first year and look at vector spaces, matrix factorisation and applications of linear algebra.

Statistics & R programming

Expanding on topics covered in year 1, we look at distributions, regression analysis, and a variety of statistical test including chi squared, ANOVA, and t-tests.

Algebraic geometry, number theory & abstract algebra

Algebraic geometry is a branch of mathematics that studies the solutions of systems of polynomial equations using geometric methods. Number theory is a vast area of mathematics, and we look at a small part of it and its applications to cryptography.

Those doing single honours will also study:

- Ordinary differential equations
- Partial differential equations
- Laplace transformation
- Fourier analysis
- Numerical analysis
- Difference Equations

Year Three

Advanced Studies in Mathematics

In year 3, we study topics that are at the forefront of the research interests of the staff currently teaching on the programme.

Statistics methods

Building up from the statistical methods learnt in the first two years, we look at the some practical applications in the real world.

Mathematical Physics

We start by defining quantities known as Lagrangian and Hamiltonian, and we show how the Euler-Lagrange equations emerge naturally from the least-action principle.

Group theory

Group theory is an important subject in mathematics that deals with algebraic structures known as groups.

Complex analysis

A complex function is a mapping from the complex numbers to the complex numbers.

Those doing single honours will also study:

- Symmetries of differential equations
 - Hamiltonian systems
 - Chaos theory and fractal geometry
- Perturbation methods
- Research Projects and Dissertations.

All students will undertake project work either as a research project (for combined students) or as a dissertation (for single honours students).

COURSE STRUCTURE

Teaching on this degree is structured into lectures, seminars and tutorials.

If you are studying Mathematics as a single honours degree, in your first year of study there are approximately 12 teaching hours each week, which reduces to approximately 10 teaching hours in your second and third years.

If you are studying Mathematics as a combined honours degree, in your first year of study there are approximately 6 teaching hours each week, which reduces to approximately 5 teaching hours in you second and third years.

On top of teaching hours, you are also expected to spend a number of hours studying independently each week, as well as studying in groups to prepare for any group assessments you may have.

ASSESSMENT AND FEEDBACK

There are a number of assessments across your three years of study, including written exams, portfolios and coursework.

You will be given feedback on your assessments, and you will have the opportunity to discuss this with your tutor in more detail.



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